



# NEWS RELEASE

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## USACE hydrogeologist ensures quality, abundance of Afghanistan's most precious resource

HERAT PROVINCE, Afghanistan - Water is a critical element for rebuilding Afghanistan's economy and security, according Afghanistan Engineer District-South's hydrogeologist, Leonard Sinfield.

"Without water, nothing can happen," said Sinfield, one of about a dozen hydrogeologists working for U.S. federal, military, or non-government agencies in Afghanistan. Sinfield assesses water resources for the Afghan National Security Forces and U.S. Forces facilities and installations.

"The Corps of Engineers looks to see if there are adequate groundwater resources because you cannot build a facility without water," he said during a site visit to wells in Herat and Qala-i-Naw May 1 and 2. "We try to predict if there is good water or not."

A U.S. Navy civilian employee from San Diego, Calif. working on an interagency detail with the South District, Sinfield has studied test results for more than 50 wells in the district and conducted hands-on site assessments and tests for 10.

Sinfield also supervises well drilling projects on Kandahar Airfield and is helping Kandahar City officials to develop its water resources master plan.

"We are trying to help Afghanistan develop drinking water for the city," he said. "We are reviewing all the wells, looking for good locations, doing all the things we do to assist Kandahar City officials correctly build wells and tap into good water for the city."

Sinfield said he is helping the Afghans with technical aspects of drilling several deep aquifer exploration wells in and around Kandahar City. These wells will help the city diversify the number and types of reliable water sources it has available to ensure a water supply that is not subject to droughts in the future.

"As we close bases, we want to transition responsibility for the water wells over to the Afghans," he said. "We do not want to just close them. So, we may have to retrofit the wells with hand pumps and train village residents on maintenance."

Additionally, Sinfield advises area combat commanders and civil affairs teams in Regional Command South with their long-term planning and with drafting water-related policies.



Leonard Sinfield, South District hydrogeologist, inspects well pipes stacked and ready for installation in a new well site on the Afghan National Army 9th Commando compound in Herat province May 1. (USACE photo by Dave Melancon)

Meetings, documents and written test results provide only a partial picture of a well's capacity and quality. There is no substitute for an on-site assessment, Sinfield said.



Workmen drill a new well on the Afghan National Army's 9th Commando compound in Herat May 1. The site has several wells which provide abundant amounts of high quality water, said Leonard Sinfield, South District hydrogeologist. (USACE photo by Dave Melancon)

"We talk with the Afghan drillers, making sure they are doing the right things technically," he said. "We are able to ask the right questions to obtain good information on the well site."

But the most important part of these face-to-face, well-side discussions is preparing the Afghans to take over their water operations.

"We try to get the Afghans to use the information to help them make good well drilling decisions," Sinfield said.

During site visits to several wells on Corps projects in the Herat area, Sinfield found two 500-meter deep dry holes drilled into steeply sloping bedrock which is forcing the water under the mountains on Camp Zafar, three intermittent wells on Camp Stone with some minor salinity problems and "tons of good water" on the 9th Commando compound. The three sites are adjacent to one another.

"We saw a pattern: no water, OK water, very good water," Sinfield said. "We know where the good water is."

In Qala-i-Naw, where the Corps of Engineers is building a new resident office to oversee several projects taking place in Badghis province, Sinfield found one well drilled into dry clay that should be sealed, another seasonal well that could serve as a back-up water source and the remains of an abandoned well.

The abandoned well could be restored, he reported. It needs a new well house, pump, electric system, a 500-gallon day tank and a booster pump.

During his assessments, Sinfield used a portable salinity meter to test the salt content, known as total dissolved salt or TDS, of the well water and had good news to report.

"The water coming out of those wells was as good as the water that was being delivered by truck," he said.

The delivered water has a salinity level of about 1,600 parts-per-million while the water on a nearby Spanish Army forward operating base had TDS of approximately 1,800 ppm, he said. Water throughout the Qala-i-Naw area has salinity ranges measuring from about 1,250 to 1,800 ppm.

"It is all good water," Sinfield said. "It may just taste a little salty and makes bad coffee or tea." However, it is safe and potable, he said.

The higher salt content came as no surprise, Sinfield said, salty water is an issue throughout the region.

“You have a lot of water that is really salty, really hard,” he explained. “The first aquifer that you hit is usually really salty. In some areas of the country that is all you can get, especially along the Iranian border area.”

Wells drilled deeper than 300 meters can usually overcome the salt problem and have other benefits, he said. The added depth yields higher pumping capacity and higher quality water.

Without water, Afghanistan cannot grow and prosper, Sinfield said.

“You can’t develop anything without water. Water drives the economy here. Electrical subsystems need water, hydroelectric systems need water, agriculture needs water,” he said. “Afghanistan used to export a lot of agricultural products in the pre-war years. Hopefully we can help them get back to that point.”

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Leonard Sinfield, South District hydrogeologist, tests water with a portable salinity meter before inspecting wells in Herat and Qala-i-Naw. Southern Afghanistan is an arid desert and salty water, an issue throughout the region, can be overcome by drilling wells more than 300 meters deep. (USACE photo by Dave Melancon)